REMARKS

The claims remaining in the application are 1-4, 6-7, and 10-18. Claims 1-18 are rejected. Claims 1 and 15 are amended herein; no new matter has been added. Claims 5, 8 and 9 are canceled. Claim 15 was additionally amended to include a close parenthesis ")" to correct an inadvertent typographic error. This change is made only for clerical purposes and not for any reason related to patentability.

The Applicant would like to thank the Examiner for the very quick and courteous final Office Action.

Disclosure Objection

The Examiner objected to the disclosure because of the following informality: Page 1 of the Specification requires amending to recite that the application is a "continuation-in-part of U.S. Patent Application 10/008,173 ***and*** has matured into Patent 6,695,968, issued 2/24/04."

The Applicant appreciates the Examiner pointing out this inadvertent error, and respectfully directs the Examiner's attention to the amendment to page 1 where the reference to the parent application has been changed to read as the Examiner has helpfully suggested. This change overcomes the Examiner's objection. This change is made only for clerical purposes and not for any reason related to patentability.

Reconsideration is respectfully requested.

35 U.S.C. §103(a) Rejection Over Bellos, et al. in view of Augustin, et al.

The Examiner rejected claims 1-18 under 35 U.S.C. §103 as being allegedly unpatentable over U.S. Pat. No. 5,853,592 to Bellos, et al. in view of U.S. Pat. No. 5,045,212 to Augustin, et al. for reasons of obviousness.

The Examiner contends that Bellos, et al. discloses a composition, for separating water-soluble organics and water essentially consisting of a hydrophilic, hydroxymonocarboxylic acid, such as hydroxyacetic acid or AHA, such organic acid optionally constituting essentially all or 99% of the active ingredient. The Examiner finds that Bellos,

et al. disclose that the composition may comprise a "minor amount" of other ingredient such as a demulsifier.

For claims 8 through 18, the Examiner finds that Bellos, et al. indicates a relatively high ratio of AHA to minor ingredient of demulsifier.

For claims 15-18, the Examiner asserts the composition may comprise also water-like fluid phase or water and other solubilized organics, such as organic wetting agents, that are soluble in the added water. The Examiner finds that Bellos, et al. discloses that if necessary, the composition is added to a fluid mixture being separated, including water and solubilized organics resulting in a mixture encompassing the water and organics being separated as well as the active organic acid ingredient and emulsifier.

The Examiner admits that the instant claims all differ in requiring the demulsifier to constitute an anionic polymer. However, the Examiner alleges that Augustin, et al. teaches to separate oil/water emulsions by anionic demulsifiers. In response to the Applicant's previous arguments, the Examiner further notes that specifically, Augustin, et al. teaches to separate oil/water emulsions, for example in crude oil production, by sequentially adding an organic cationic demulsifier and then an inorganic demulsifier to the crude oil/water emulsion, followed by, adding an inorganic demulsifier and then an organic polymeric demulsifier to the resulting aqueous phase to further clarify such aqueous phase. Thus, the various demulsifiers of Augustin, et al. are not applied together, they are applied sequentially.

The Examiner contends that it would have been obvious to one of ordinary skill in the art to have employed the anionic demulsifiers taught by Augustin, et al. as the demulsifier of Bellos, et al. since these demulsifiers are shown to result in separated water phase, having an environmentally permissible very low degree of contamination with oily contaminants, and lower than other well known types of demulsifiers. In additional response to the Applicant's previous arguments, the Examiner additionally alleges that it would have been obvious to have added, specifically, an anionic, polymeric demulsifier, to the composition applied by Bellos, et al., since Augustin, et al. teaches that this type demulsifier results in an aqueous phase resulting from crude oil production being sufficiently clarified to permit its discharge into an outfall ditch, thus meeting environmental standards.

The Examiner further asserts that Augustin, et al. teaches the anionic polymer being copolymers of acrylic or methacrylic acid and acrylamides and esters thereof for claims 4, 7, 13, and 18, and these having a high degree of polymerization as in claims 5, 6 and 14.

The Examiner further found that Applicant's arguments filed May 10, 2006 have been fully considered but they are not persuasive. The Examiner noted that it was argued that there was no suggestion in Augustin, et al. to choose an anionic polymeric demulsifier from amongst a wide array of demulsifiers. However, the Examiner asserts that Augustin, et al. teach that such type of demulsifier uniquely results in the aqueous phase resulting from an original crude oil/water emulsified mixture having a low enough level of residual oil to be discharged to the environment.

The Examiner further found that the Applicant argued that Augustin, et al. requires that anionic co-polymers must be used *together* with cationic demulsifiers and other types of demulsifiers. The Examiner instead contends that Augustin, et al. instead adds different types of demulsifiers including cationic demulsifiers in sequential stages and at the end of the process, adds an anionic polymeric demulsifier to the resulting partially purified aqueous phase resulting from a crude oil water/oil emulsion mixture.

The Applicant respectfully traverses.

Again, to support an obviousness rejection, the Examiner has the initial burden of establishing a *prima facie* case of obviousness of the pending claims over the cited prior art, *In re Oeticker*, 977 F.2d 1443, 1445; 24 U.S.P.Q.2d 1443 (Fed. Cir. 1992).

It is respectfully submitted that the Examiner may have misinterpreted part of Applicant's argument. Applicant does not contend that Augustin, et al. teaches using all of their demulsifiers together. Applicant *does* understand that Augustin, et al. are using them sequentially. Applicant's position is that there is nothing in Augustin, et al. or Bellos, et al. that teaches a composition as claimed containing AHA (*e.g.* glycolic acid) together with an anionic polymer as the only components of a composition effective or necessary to remove solubilized organics) (claims 1-14) or a composition as claimed containing an AHA together with an anionic polymer together with at least one solubilized organic and a water-like fluid phase (claims 15-18).

It is respectfully submitted that the Examiner may not realize that anionic polymers *per se* do not remove oil emulsified in water. No one, in particular Augustin, et al. or Bellos, et al. ever claims or teaches they do or claims or teaches that they ever do – unless, of course, a cationic surface modifier is added *first*. The anionic polymers are "known demulsifiers" *only* in the context or matrix of a previously cationized emulsion.

The reason is that droplets of petroleum oil in water have an anionic surface charge (as shown, for example, by their negative zeta potential or their titration with cationic dyes). It is respectfully submitted that this is common knowledge. Unless the surface is somehow first cationized, anionic polymers are repelled from the surface and do not interact with it to create mutual attraction of droplets.

The Examiner's attention is respectfully directed to the transition language "consisting essentially of" in independent claims 1 and 10. The term "consisting essentially of" excludes ingredients that would materially affect the basic and novel characteristics of the claimed composition, but is open to unlisted ingredients that do not materially affect the basic and novel properties of the invention. *AFG Indus. v. Cardinal IG Co.*, 239 F.3d 1239; 57 U.S.P.Q.2D 1776 (Fed. Cir. 2001). This language has now been included in independent claim 15. Its inclusion does not constitute an improper addition of new matter since such language was present in independent claims 1 and 10 as filed. Applicant respectfully submits that a composition that consists essentially of AHA and an anionic polymer that successfully removes WSOs from water-like fluid phases was unknown prior to Applicant's discovery thereof.

The whole novelty of the Augustin, et al. treatment is said to be finding a way to use the otherwise ineffective anionic polymers, instead of the usual cationic polymers (Augustin, et al. column 1, lines 15-20), by first cationizing the emulsion with cationic, surface adsorbing, divalent metal cations:

> Until now, o/w emulsions have been separated using single-step processes in which to the o/w emulsions are added either inorganic demulsifiers or organic cationic demulsifiers (cf., for example, EP-A-186,029) or else first organic cationic demulsifiers are added followed by inorganic demulsifiers (modified Windsor process. [sic]

The surface groups are converted from $\vdash COO^-$ to $\vdash COOCa^+$. Only then will the anionic polymers perform. Thus, while it is true that Augustin, et al.'s anionic "demulsifier

results in an aqueous phase ... sufficiently clarified to permit its discharge" within the context of the teaching, Augustin, et al. teaches *only* that *following a pretreatment with a multivalent metal cation salt*, an anionic polymer that would not *otherwise* have clarified water at all, produces sufficient clarity for discharge.

Moreover, (in disagreement with Bellos, et al.) the claimed composition should be added before the bulk oil and water are separated (Augustin, et al.'s Step 1) in order to remove water solubilized organics. Augustin, et al.'s anionic polymer must be added after the bulk oil and water separation and *after* a series of three *other* demulsifiers have also been added. It should be understood that Augustin, et al.'s treatment would *not* work if the anionic polymer were added as the *first* composition in mixed production rather than the *last* composition just prior to discharge. The Applicant respectfully submits that it is *not* obvious to one having *ordinary* skill in the art that the claimed co-formulation with an α-hydroxy hydrophilic acid would allow the addition order and substrate treated to be completely *reversed* to the manner of Bellos, et al. It is the novel and surprisingly simple composition claimed herein that permits these methods to work and be correspondingly simple.

It is respectfully submitted that an important part of the Applicant's invention is the discovery is that, while acids are generally considered to be anionic (thus polyacids are anionic polymers), if the proton donating power is strong enough to protonate the prevailing surface acid (through α-hydroxy activation) and the conjugate base is hydrophilic enough (specific supporting criteria are given in the specification) to stay hydrated and not adsorb onto the surface, then these supposedly anionic additives can have a cationizing effect of a magnitude similar to the pre-addition of multivalent cation salts – but without having to employ these cationic salts. It is respectfully submitted that this idea is not referenced elsewhere and particularly not suggested or hinted at by the cited art; thus these unique and spare compositions are Applicant's unique and non-obvious contribution to the art.

To stress this important understanding of the invention, claim 1 has been amended to recite that the weight ratio of AHA to anionic polymer in the composition ranges from over 50:1 to 10,000 to 1. The greater presence of the AHA emphasizes its importance to the claimed composition as noted above. It is respectfully submitted that

support for this language is found in claims 9, 10 and 15 of the application as originally filed and elsewhere, and thus its inclusion into claim 1 does not constitute an improper insertion of new matter. (Claims 5, 8 and 9 have been canceled as redundant.)

It is respectfully submitted that Augustin, et al. does not disclose anything about compositions containing their demulsifiers together with any AHA, much less a composition where the basic and novel properties of the composition are simply and only provided by AHA and an anionic polymer. Bellos, et al. only discloses in the paragraph bridging columns 6-7 that minor amounts of other compositions may be added to their acid compositions, and only generally lists "demulsifiers" in a list with other possible components.

Applicant further respectfully submits that the Examiner has not made a *prima facie* case for combining the teaching of Bellos, et al. with that of Augustin, et al. to result in a composition *consisting essentially of* an AHA with an anionic polymer as required by the claims. Augustin, et al. teaches three different demulsifiers. There is no disclosure in either reference of a composition containing only an anionic polymer with an AHA as the components establishing the basic and novel properties of the recited composition. Why would one having *ordinary* skill in the art add only an anionic polymer from Augustin, et al. instead of an inorganic emulsifier? Or an organic cationic emulsifier? From what one can tell there is no answer to these questions because the references give no reason why one having ordinary skill in the art would *know* to formulate such a composition.

A reason, suggestion or motivation to combine the teachings of the references must be present to support a *prima facie* rejection of obviousness. *Alza Corp. v. Mylan Laboratories, Inc.* 391 F.3d 1365, 1372-1373 (Fed. Cir. 2004). Again, "...[T]he examiner has presented no line of reasoning ... as to why the artisan viewing only the collective teachings of the references would have found it obvious to selectively pick and choose various elements and/or concepts from the several references relied on to arrive at the claimed invention." *Ex parte Clapp*, 227 U.S.P.Q. 972, 973 (B.P.A.I. 1985). "The mere fact that the prior art could be so modified would not have made the modification obvious unless the prior art suggested the desirability of the modification." *In re Gordon*, 733

F.2d 900, 902, 221 U.S.P.Q. 1125, 1127 (Fed. Cir. 1984) cited in *In re Mills*, 916 F.2d 680, 16 U.S.P.Q.2d 1430 (Fed. Cir. 1990).

Why would one having ordinary skill in the art be motivated to only use the organic anionic demulsifier when all three are taught as required in the Augustin, et al. compositions? It is again respectfully submitted that there is nothing in the references that suggests or hints at Applicant's discovery of the cationizing effect discussed above of an α-hydroxy activation provided by the larger presence of AHA. Augustin, et al. teaches consistently and repeatedly that an organic cationic demulsifier *and* an inorganic demulsifier are used *in concert with* an organic anionic demulsifier. There is no teaching or suggestion to leave out the organic cationic demulsifier and the inorganic demulsifier. Again, the organic anionic demulsifier is not used in the first step to treat the oil-in-water emulsion, but is only taught for the Step 2 of treating the aqueous phase a second time where two *other* demulsifier types are necessary for the entire method.

As discussed previously in the first Amendment, Bellos, et al. concerns oil well production fluids composed of oil and water and containing in excess of 100 ppm water soluble petroleum carboxylates in anionic form dissolved in the water which are treated by acidifying the fluid to a pH of 6.0 or lower with a combination of a strong organic acid and a strong mineral acid and then is intimately mixed. The oil and water are separated one from the other. The content of the water soluble organics in the water is thereby substantially transferred to the oil phase. (Abstract).

Bellos, et al. discloses only the very *general* possibility of adding "demulsifiers" to his acids; see column 4, line 2; and column 7, line 2, lines 17-21. However, Bellos, et al. provide *no* indication what type or *kind* of demulsifier is suitable, appropriate or necessary. The subsequent Bellos, et al. Example includes many components but *no demulsifier*. Bellos, et al.'s other references to demulsifiers are likewise non-specific or irrelevant (*e.g.* those for water-in-oil emulsions in desalters). It is respectfully submitted that there is no mention, disclosure or suggestion of anionic, cationic, nonionic, polymeric, monomeric, organic, inorganic, hydrophilic, lipophilic, amphophilic, omniphilic, or any other kind or type of demulsifier. Thus, there is still no reason for one having only *ordinary* skill in the art to choose an anionic organic polymer from that near-infinite universe of possibilities, based on the scant teachings of Bellos, et al. There is no hint or

suggestion that any particular class would be any more appropriate than all the other possibilities, much less that an anionic polymer would be appropriate. No mechanism or thesis provided in Bellos, et al. to make this choice, but the single, highly ambiguous word "demulsifier". It is respectfully submitted that one having ordinary skill in the art has no idea what demulsifier to use or why. As established above, Applicant has discovered that it is the specific combination of anionic polymer to AHA, particularly with an excess of AHA, that gives a uniquely simple composition permitting the simple method already the subject of the parent application that matured into U.S. Pat. No. 6,695,968.

The Applicant would respectfully note that all of the claims require an *anionic* polymer. The Examiner essentially admits that Bellos, et al. do not teach or suggest an anionic polymer, and turns to the teachings of Augustin, et al.

It is further respectfully submitted that Augustin, et al. does not clarify the situation or add anything to understanding of it for one having only ordinary skill in the art. Augustin, et al. teaches that anionic acrylic copolymers are included in the class of organic anionic demulsifiers that *must be used in combination with inorganic* anionic demulsifiers, organic *cationic* demulsifiers, and *inorganic cationic* demulsifiers to remove insoluble oil from water. Augustin, et al. is consistent in teaching that all must be used in combination and correct sequence, and repeats this combination many times. There is no mention or implicit inclusion in Augustin, et al. of *any* kind of acid, organic or inorganic, among the variety of species taught. Thus, it is respectfully submitted that there is no reason for one of only *ordinary* skill to pluck out from this broad, almost all-inclusive list some anionic acrylic copolymers to use without the other three types of chemicals and form a combination instead with something else entirely different.

"Our reviewing courts have often advised the Patent and Trademark Office that it can satisfy the burden of establishing a *prima facie* case of obviousness *only* by showing some *objective* teaching in either the prior art, or knowledge generally available to one of ordinary skill in the art, that 'would lead' that individual 'to combine the relevant teachings in the references.' Accordingly, an examiner *cannot* establish obviousness by locating references which describe aspects of a patent applicant's invention without *also* providing *evidence of the motivating force which would impel one skilled in the art to do*

what the patent applicant has done." (Citations omitted; emphasis added.) *Ex parte Levengood*, 28 U.S.P.Q.2d 1300, 1302 (B.P.A.I. 1993).

The Applicant would respectfully submit that there is nothing in Bellos, et al. or Augustin, et al. or the combination thereof that would impel one having *ordinary* skill in the art to make the limited, "consisting essentially of" 2-component combination supposed by the Examiner. There is *no* hint in Augustin, et al. that that one class of demulsifier would be any more appropriate than all the others mentioned. There is no mechanism or thesis provided to connect the two references, but the single, highly ambiguous general word "demulsifier" in Bellos, et al., it is respectfully submitted. Again, one having ordinary skill in the art has no idea what to use or why.

For all of these reasons it is respectfully submitted that the Examiner has not made a *prima facie* case of obviousness. Reconsideration of the claims and withdrawal of the rejection are respectfully requested.

Request for Entry of Amendment

The Applicants would respectfully submit that the instant Amendment be entered under 37 CFR §1.116(b): "Amendments presenting rejected claims in better form for consideration on appeal may be admitted." It is respectfully noted that claims have been canceled herein. Further, claim 1 has been narrowed by the recitation of the relative proportions of the AHA to anionic polymer. It is respectfully submitted that for all of these reasons, which simplify and narrow the issues for consideration on appeal, the instant Amendment should be entered.

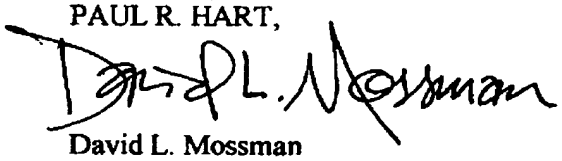
Further, the Applicants would respectfully submit that the instant amendment be entered under 37 CFR §1.116(c): "If amendments touching the merits of the application or patent under reexamination are presented after final rejection, or after appeal has been taken, or when such amendment might not otherwise be proper, they may be admitted upon showing of good and sufficient reasons why they are necessary and were not earlier presented." The Applicants submit that the reason why the amendments and arguments above are necessary and were not earlier presented is simply because the Applicant had a *bona fide* belief that his positions were clearly and fully presented earlier, but that given the Examiner's statements in the final Office Action, Applicant may have inadvertently

led the Examiner to believe that the Augustin, et al. reference was not properly understood. For the Applicants to have any hope of clarifying his position and being assured of a chance to address the instant rejections, the amendments and arguments herein must be entered and considered.

It is further respectfully submitted that the amendments herein do not raise new issues or require a new search, since the proportion of AHA to anionic polymer now recited in claim 1 was in fact already present in claims 9, 10 and 15 as originally filed. Further, the recitation of "consisting essentially of" in claim 15 does not raise new issues or require a new search since this language was already present in claims 1 and 10.

It is respectfully submitted that the arguments and amendments presented above overcome the rejections and place the claims in condition for allowance. Reconsideration and allowance of the claims are respectfully requested. The Examiner is respectfully reminded of his duty to indicate allowable subject matter. The Examiner is also invited to call the Applicant' attorney at the number below for any reason, especially any reason that may help advance the prosecution.

Respectfully submitted,
PAUL R. HART,



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